Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

turpentine and benzol, but insoluble in water and in a solution of sodium chloride. It becomes gradually oxidized on exposure to an imperfectly crystalline resinous substance. It is probably an ethereal oil, and an invariable accompaniment of the coloring substance of chlorophyll, and even more universally distributed than starch or oil. It has not yet been detected in those plants which do not contain true green chlorophyll, such as the Phycochromaceæ, Diatomaceæ, Fucaceæ and Florideæ. Starch and oil appear to be reserve substances produced by the oxidation of the hypochlorin caused by light, it being the most readily oxidizable constituent of the cell, more so even than chlorophyll itself.

That the hypochlorin—present in variable quantity in every chlorophyll grain under normal circumstances—is subject to continual increase and decrease, may be proved without difficulty. All comparative observations on chlorophyll grains in younger and in older conditions, point unmistakably to the conclusion that the collection and increase of the starch enclosed in the ground substance of the chlorophyll, goes on *pari passu* with a decrease of the hypochlorin. In dark, the hypochlorin, which does not take any direct part in the transport of food materials, is more permanent than starch; and this fact again is in agreement with the conclusion that its transformation in the cell into more highly oxidized bodies is hindered by the increased respiration in light.

In the facts here detailed, and the conclusions derived from them, Dr. Pringsheim believes that an entirely new light is thrown on the cause of the well-known fact that assimilation takes place only in those cells of the plant which contain chlorophyll. This substance acts universally as a moderator of respiration by its absorptive influence on light, and hence allows the opposite phenomena of respiration and elimination of carbon dioxide to go on in those cells which contain it. A more detailed account of the experiments and results is promised by the author in a future paper.—*Alfred W. Bennett.*

ZOOLOGY.[1]

BUNDLES OF SNAKES.—The statements made by Humboldt as to the piles of snakes he saw in Guiana, can be verified here in our northern woods and swamps. I personally had the pleasure of observing it twice, both times very early in spring, and in locations which could be called wildernesses. I first saw such a bundle of snakes in the neighborhood of Ilchester, Howard Co., Md., on the stony bank of the Patapsco river, heaped together on a rock and between big stones. It was a very warm and sunny location, where a human being would scarcely disturb them. I reasoned that the warmth and silence of that secluded place brought them together. Some hundreds of them could be counted, and all of them I found in a lively state of humor, hissing at me with threatening glances, with combined forces and with such a persistency that stones thrown upon them could not stop them nor alter the position of a single animal. They would make the proper movements and the stone would roll off. All the snakes in this lump were common snakes (*Eutænia sirtalis* L.). The second time I noticed a ball of black snakes (*Bascanion constrictor* L.) rolling slowly down a steep and stony hillside on the bank of the same river, but about two miles above Union Factory, Baltimore county, Md. Some of the snakes were of considerable length and thickness, and, as I noticed clearly, kept together by procreative impulses.

---

[1] The departments of Ornithology and Mammalogy are conducted by Dr. ELLIOTT COUES, U. S. A.

It is surely not agreeable to go near enough to such a wandering, living and hissing hundred-headed ball to examine the doings and actions, and search for the inner causes of such a snake association. As, furthermore, the localities for such mass-meetings of snakes are becoming rarer every year, and our rapidly increasing cultivation of the country must make it hotter for snakes everywhere, only a few naturalists could see such a sight, even if they should look for it in proper time, which, as stated above, seems to be the first warm days in spring.—*E. L., Ellicott Mills, Md.*

REVERSED MELANTHONES.—It is a not uncommon circumstance for collectors, in taking any considerable number of the various so-called species of Melantho, to find a few of them heterostrophal, or sinistral. Dr. Kirtland, in the Ohio Report (quoted by Binney in Land and Fresh-water Shells of North America, p. 44), described one of these abnormal forms as *Paludina heterostropha*, though he evidently was not altogether clear as to its specific value, for he remarks, " I formerly considered it as a mere variety of *P. decisa* Say." This same shell Mr. Binney has referred to *Melantho ponderosus* Say. That all of these sinistral shells *are* abnormal forms of one or more of the well-known Melanthones is now conceded by most naturalists. It was with not a little surprise, therefore, that the writer recently received from a collector in Illinois a reversed shell of *M. subsolidus* Anth. labeled with the old and almost forgotten name given by Dr. Kirtland. Having collected a very large number of the three species common in New York, viz., *M. rufus* Hald., *M. integer* De Kay, and *M. decisus* Say. I wish to place on record the following observations made in the spring of 1877, with reference to the relative abundance of these reversed forms.

The method pursued was as follows: From impregnated shells, about the time of parturition, the young Melanthones were taken and separated into lots of one hundred specimens each. Every shell was then carefully inspected, and it was found in the case of *M. integer* that two per cent. of every one hundred shells were sinistral. Of *M. rufus*, about one and one-half per cent. of every *one thousand* were thus reversed, while the per cent. of *M. decisus* was between two and two and one-half in each hundred. Comparing these averages with the number of mature reversed specimens collected through quite a long period of time, it was found that only about one-tenth of *one* per cent. survived the accidents consequent on station and environments.

How to account for the presence of sinistral shells at all now became the problem. I submit the following suggestions: Many adult and impregnated specimens were dissected and carefully studied, with the result that the position of the embryonic shells was such as to necessarily crowd them one on another. As they increased in size (this is based upon the inspection of shells in different stages of development), their proximity influenced their assumption of form, more and more, and many curious and abnormal shapes were given the growing shells. Binney (l. c., p. 49) figures some of these forms, while others have been described as species (e. g. *Paludina* (*Melantho*) *genicula* Con.). Mr. Binney very properly groups these aberrant forms under *M. decisus* or *M. integer.* These "shouldered" and otherwise deformed shells are due to the crowding mentioned above. Is it not possible that the reversed forms originate in a similar way; the embryonic shell increasing in the direction of the least, or no resistance? The direction of the "whirl" thus started, would be followed in all the succeeding stages of development.

Mr. Binney doubts the specific identity of *M. rufus* Hald., but if the usually accepted definition of "species" be allowed, without good reason. The three above-mentioned forms are associated in the Erie Canal, at Mohawk, N. Y., and so far as species go they are all valid. The latest understanding of a species would, however, relegate them all, together with the other southern and western forms of the genus, to varieties of one sole type.—*R. Ellsworth Call, School of Science, Dexter, Iowa.*

LAWS OF HISTOLOGICAL DIFFERENTIATION.—In a recently published article (Proc. Boston Soc. Nat. Hist., Vol. xx, p. 202) Dr. C. S. Minot discusses certain laws of histological differentiation. He maintains that, first, the most primitive form of tissue is an epithelium composed of a single row of polyhedral cells of equal height. Second, very early in the course of development the ectodermic cells become smaller and multiply faster than the cells of the entoderm. Third, the two horizontal axes of an epithelial cell (or those parallel to the surface of the epithelium) usually remain approximately equal to one another in length, while the perpendicular axis varies independently and to a much greater extent. Fourth, epitheliums increase their surface by the formation of depressions (invaginations) or of projecting folds (evaginations). Fifth, structural modifications of epitheliums usually affect similarly a whole cluster or tract of cells, but rarely isolated cells only. Sixth, probably the primitive cells of the mesoderm are amœboid in character. For all mesodermic cells, not mechanically united with other cells, but capable of independent locomotion by amœboid movements, is proposed the collective name of "*mesamœboids*." The author concludes by saying that if these views are confirmed "we shall then have discovered primary *histological* differences between the three germinal layers in their earliest stages as follows:

EPITHELIAL.	
A. Small cells, mainly protoplasmatic	Ectoderm.
B. Large cells, with much deutoplasm	Entoderm.
AMŒBOID.	
C. Cells free in the cavity between the two primitive layers, ecto- and entoderm	Mesoderm.

ANT BATTLES.—I have within the past few years witnessed several battles between ants, and in some instances, the curious conduct of the captors towards their prisoners which I think is worth mentioning. The most noted battle took place July, 1878, between two colonies of red ants. The victorious army were medium in size and numbered many thousands; those captured were a much larger ant, but not so numerous. The large ants after a desperate resistance were forced out of their fort, four or five small ants holding on to the antennæ and legs of the prisoner. The captives were usually taken a few inches away from the fort and liberated. All the ants returned to the fight except one who would stand facing his captive for a few moments, then taking hold of the antennæ of the prisoner give three or four pulls; after waiting a short time the pulling was repeated with more determination; the big ant not responding, he was savagely jerked, then he would lean forward, and a drop of sweet issuing from his mouth, the little ant would approach and drink the nectar, then pick up his captive and hurry home. This was repeated many times during the battle. Some of the prisoners gave up their sweets without so much pulling. I think this battle was for no other purpose than to secure the sweets supposed to be in the stomachs of the captives. These ants were kept prisoners just one week, when they were liberated, marched off in a body and never returned. They were probably kept confined until their sweets were exhausted and then allowed to go free.—*A. Miller, North Manchester, Indiana.*

NOTES ON THE GEOGRAPHICAL DISTRIBUTION OF THE CRUSTACEA.—Mr. Miers in his excellent work on the Crustacea of New Zealand,[1] enumerated several species which were common to that country and America; these are *Neptunus sayi*, *Platyonichus bipustulatus*, *Grapsus pictus*, *G. variegatus*, *Heterograpsus crenulatus*, *Nautilograpsus minutus*, *Plagusia chabrus*, *Leiolophus planis-*

---

[1] Catalogue of the Stalk and Sessile-eyed Crustacea of New Zealand. Colonial Museum and Geological Survey Department, 1876.

simus, *Rhynchocinetes typus*, *Palæmon tenuicornis* Say (*natator* Auct.), *Squilla nepa*, *Sphræroma gigas*. Mr. T. W. Kirk (Trans. New Zealand Institute, IX, 474, pl. XXVII), adds *Platyonichus ocellatus* and *Squilla armata* to the list, and in a paper now before me[1] *Caprella lobata* and *Petrolisthes rupicolus* are added to the list, the latter illustrated by a figure. In a second paper[2] he reports from his Antipodal Island species before known from British seas, viz.: *Calocaris macandræ*, *Portunus pusillus* and *Fleustes panoplus*, but regarding his *Podocerus cylindricus* there may be a doubt, as our author apparently has not access to Say's description, and Spence Bate in his catalogue of Amphipodous Crustacea, describes and figures a distinct species from that of Say, as was pointed out by Smith. Say's type is no longer in existence.

Mr. Wood Mason (the exact reference I have not at hand) reports *Carcinus mænas* from India, and Spence Bate in J. K. Lord's "Naturalist in Vancouver" reports the well known *Gelasimus annulipes* of the east coast of the eastern continent from Vancouver. *G. macrodactylus* Edwards et Lucus, from Chili, is the same species.

I have nearly completed a revision of the genus *Gelasimus*, and perhaps it may not come amiss to state some of my facts in advance of the appearance of the completed paper. *G. maracoani* Latr. (*armatus* Smith), *heterocheles* Bosc. (*patlydactylus* Edw., *princeps* Smith), *vocator* Martens ex Herbst. (*vocans* Edw. *palustris* Edw. *pugnax*, *mordax et rapax* Smith, *brevifrons* Stm., *affinis* Streets), are found on both shores of our continent, and specimens of *vocator* and *pugillator* are in the museum of the Philadelphia Academy from Mauritius, and of *maracoani* from Natal. *G. coarctatus* was described from Odessa, by the elder Milne-Edwards, while his son reports it from New Caledonia. The Philadelphia Academy possess one of the original specimens which formerly belonged to Guerin-Meneville. No subsequent author (to my knowledge) has ever seen a specimen from Europe. Marcussen in his first paper on the Crustacea of the Black Sea[3] does not mention it, but I have not access to his subsequent paper nor that of Uljanin on the fauna of that locality. Heller in his Crustacea of Southern Europe, quotes it on the authority of Edwards. Now Guerin's specimens and Edwards' description and figure[4] agree well with specimens from the Philippines and Australia, and answer in every particular to the description by Adams and White[5] of *G. forcipatus* from Borneo. The name *coarctatus* must hence lapse into synonymy. I am inclined to consider the locality Odessa as erroneous. From these few facts, selected from a large number in the writer's notes, it will be seen that our notions of the geographical distribution of marine forms must be considerably modified and that the number of known species is considerably less than the number of descriptions of supposed distinct forms would indicate. I find the fiddler crabs enumerated under nearly one hundred distinct names, while the number of species will not much exceed forty, and this confusion has proceeded partly from the idea that distinct localities must have distinct forms and partly from assuming that minute variable characters were of specific importance; and I would here say that my own work in both of these respects has not been altogether faultless, but I hope ere long to correct my sins of omission and commission.—*J. S. Kingsley.*

---

[1] Additions to the Carcinological Fauna of New Zealand. Trans. New Zealand Inst., 1879, pp. 392–397.

[2] l. c., pp. 401–402.

[3] Archiv für Naturgeschichte, XXXIII, pp. 358–363.

[4] Annales Sciences Naturelles, III, XVIII, 146, pl. III, Fig. 6.

[5] Voyage of the Samarang Crustacea, p. 50.

THE PSOROSPERMS FOUND IN APHREDODERUS SAYANUS.—Mr. W. P. Seal recently brought me a specimen of this curious little fish, which he had obtained near Woodbury, N. J. The specimen had interested him on account of the great number of large white cysts imbedded in its muscles just beneath the skin, causing the latter to swell outwards, producing an appearance of lumps on the body, as if diseased. When the little animal was held between the eye and light, the embedded cysts being opaque, made it easy to locate each one, and I have sketched this appearance in the accompanying outline (Fig. 1, A) of the fish with the cysts in place. There were about twenty of these cysts in all, which were found to be arranged as a rule in pairs on the opposite sides of the body of the fish.

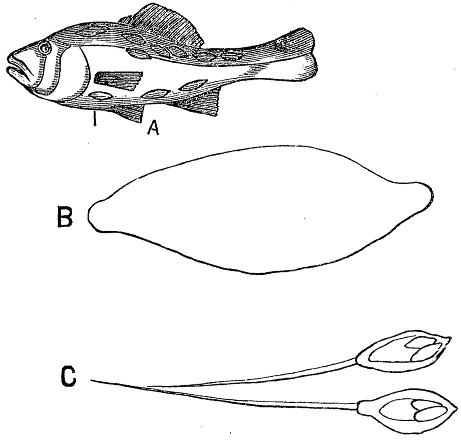

FIG. 1.—Psorosperms in the pirate perch. B, cyst much enlarged.

On cutting through the skin, the cysts were found to have a very thin membrane, which when ruptured, allowed a thick white creamy mass to escape. Upon examining this material with a power of 900 diameters it was found to be entirely composed of very minute ovoid bodies with a tail, as shown in Fig. 2, D: a pair of nucleated elongate bodies were enclosed and attached to the membranous body-wall of what appeared to be the head end. There were many thousands of these bodies in a single cyst, and were it not that the tail did not exhibit the slightest movement, they might have been regarded as spermatozoa. A very few were seen without a tail as in Fig. 2, C.

Fig. 2, B represents an optical section of the head end of one like that shown at D in profile, and shows the oblong attached internal bodies in an excentric position with reference to the enveloping membrane. Excessively minute round granules were found mixed in great abundance with the tailed forms.

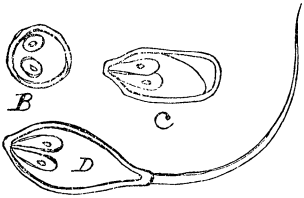

FIG. 2.—Psorosperms.

These are veritable psorosperms and are almost identical in form with those found by Müller in 1841, in European freshwater fishes. The above description is not different in any essential particular, from that given by Müller, and I only offer this account in order that it may induce others to look for similar parasites in other common vertebrates. Cobbold states that they are harmless if eaten with the flesh which contains them, stating that in eating of the heart of a healthy ox, which had furnished part of two meals, he himself must have consumed at least 18,000 of these parasites. They are supposed to be an embryonic stage of development of the Gregarines.

Psorosperms, have not, as far as I am aware, been recorded as being found in *Aphredoderus*, which is a characteristically American fish. There must have been half a million of these embryonic gregarines in the individual fish which I examined.—*John A. Ryder.*

STRUCTURE OF THE EYE OF LIMULUS.—The eyes of the horseshoe or king crab are four in number; consisting of a pair of compound eyes situated on the side of the head, and a pair of small simple eyes on the front of the head. As described by A. Milne-Edwards and Owen, the optic nerves to these eyes are very long and slender. Those distributed to the larger compound eyes are very long, and close to each eye subdivide into an irregular plexus of fine nerves, a branch being, as we have found, distributed to each facet composing the compound eye. The structure of the eye is very unlike that of any other Arthropod eye. The cornea is simply a smooth convex portion of the integument, which is much thinner than the adjoining part of the chitinous skin. There are no facets, the cornea externally being structureless, simply laminated like the rest of the integument. In the internal side of the cornea are a series of solid chitinous conical bodies, separated from one another by a slight interspace and in form resembling so many minnie-rifle balls; the conical ends of these solid cones project free into the interior of the body, and are enveloped in a dense layer of black pigment. Within the base of these cones are secondary shallow cup-like bodies or shallow secondary cones. It is these primary cones which, seen through the smooth convex translucent cornea, give the appearance of a facetted surface to the external eye.

All the parts thus far described except the pigment layer, are moulted with the rest of the crust, and the large long slender cones can be easily seen by viewing a piece of the cast-off eye; the solid cones being seen projecting from the inner surface of the cast-off cornea.

The internal structure of the eye is very simple. *There are no cones and no rods*, but a branch of the optic nerve impinges directly upon the end of the solid chitinous cone, as determined by removing the layer of pigment with dilute potash, and treating the section with acetic acid and then staining with picro-carmine. So far as we can ascertain, no Arthropod eye is so simple as that of Limulus. Our observations have been based on a study of the structure of the lobster's eye from preparations of very great beauty and delicacy, kindly made for us by Norman N. Mason, Esq., of Providence, who has also made beautiful sections of the Limulus eye, after treating them in various ways. The question as to the nature of the solid cones we are not yet prepared to settle. Are they crystalline lens or only analogous organs? Can the horse-shoe crab distinguish objects? We doubt if its eyes enable it to more than distinguish between the light and darkness. Since the above remarks were put in type, we have seen Grenacher's great work on the eyes of Arthropoda. He regards the conical chitinous minnie-ball-like bodies as corneal lenses. He does not describe the simple eye, which is a close repetition of one of the corneal lenses of the compound eye of the same animal, except that the lens is shorter and with the end much more obtuse.—*A. S. Packard, Jr.*

ADVENT OF PASSER DOMESTICUS IN NORTH CAROLINA.—The following letter is published in the belief that it is desirable to preserve records of the spread of this bird in this country.—*Elliott Coues, Washington, D. C.*

DALLAS, N. C., NOV. 30, 1879.

Dr. Elliott Coues.

Dear Sir:—Thinking that any information concerning the English sparrow would be appreciated, I take this liberty. On the 23d inst., I saw what I believed to be one of that species at this place, and on the 24th and 25th, I killed two. Both were males. Gaston county, of which Dallas is the county seat, borders on South Carolina, is in the Piedmont region, but still a good ways south, and I had supposed that we would never be invaded. The West and North I had supposed were the only parts of the country that would be cursed with them, but this looks as if they were coming South. They will find no nesting boxes here, however. Are they migratory?

Yours, &c., PAUL B. BARRINGER, M. D.

THE STRUCTURE OF THE TRACHEÆ AND THE "PERITRACHEAL CIRCULATION" IN INSECTS.—Under this title M. Jules Macleod, of

Gand, has published a prize memoir of more than ordinary value. His conclusions are as follows: 1. The wall of the trachea comprises three layers: one external, probably connective; a middle chitin-forming, and an internal chitinous layer. 2. The spiral thread does not belong properly to the tubular tracheæ. 3. The spiral thread does not differ from the rest of the intima by its thickness alone; but especially in its functions. 4. The tubular tracheæ, and especially the intima of those organs, present numerous variations, even in a given group, like that of the winged insects, for example. 5. The chitin-forming tunic of the trachea is not formed by cells fused together, but it is on the contrary a true epithelium. 6. The middle tunic remains independent along the whole length of the trachea. 7. The peritracheal circulation is anatomically impossible. 8. In many larvæ, the intima presents besides the spiral thread, other parts, differing by their properties.

It will be remembered that Blanchard, and afterwards Agassiz, assumed that there was a circulation of blood between the trachea proper and its investing peritracheal membrane. Joly, and afterwards H. J. Clark of this country, maintained that this was anatomically impossible, and Macleod by experiments and dissections shows that such must be the case.

VITALITY OF HELIX ASPERA.—Almost incredible statements are found in the books concerning the vitality of snails. I must add another. August 24th, 1878, I ascended an old castle, or square tower, near Queenstown, Ireland, and found between the stones a number of the common garden snail of Europe, *Helix aspera.* I secured three specimens, and having wrapped them in paper, put them in my trunk. On my arrival home, October 28, on looking for my treasures, I found one was crushed. The other two I dipped in water a few seconds, then put them in the fernery, and was delighted to see them crawl about. I could not get them to feed. One died in the following May, having been in confinement nine months. The other died in November, 1879, having lived thirteen months without food.—*S. Lockwood, Freehold, N. J.*

ZOÖLOGICAL NEWS.—In *Forest and Stream* for Jan. 29, Henry Youle Hind states that the salmon on the Labrador and Newfoundland coast spawn in the spring as well as in the autumn, *i. e.*, that some spawn in the autumn and some in the spring.—— A blind Asellus-like Isopod Crustacean has been discovered by Prof. Forel, at great depths, in Lake Leman; the eyes are rudimentary, while the general color of the animal is white.——Mr. Darwin notices, in *Nature*, the fertility of hybrids from the common and Chinese goose, and shows that the fertility is complete. ——M. H. W. Bates states that certain species of Longicorn beetles mimic Lampyrid beetles "with great exactness, the lightgiving segments of the latter being perfectly represented in the Longicorns, although destitute of phosphorescent power."——The Report of the Commissioners of Fisheries of California for 1878 and '79, contains numerous and valuable notes on the food fishes of San Francisco by W. N. Lockington.——The Journal of the Royal Microscopical Society reports the discovery of an Otocyst-like organ in the antennæ of flies (Syrphus, etc.). There seems little doubt but that many Diptera (Muscidæ and Tabanidæ excepted) have these minute ears situated in the third joint of their antennæ. Mayer, however, questions whether these organs, of which he claims to have found fifty in the antennæ of *Musca vomitoria*, are ears, though he regards them as organs of some sense. Dr. H. Krauss finds an otocyst in the larva and imago of Tabanus, the horse-fly.——Dr. H. Burmeister discovers that the fine longitudinal lines or striæ of butterfly scales belong to the upper membrane of the scale, and that they are due to filaments which are elevated on the inner side of the upper membrane. These views are in opposition to those of Beck, and may be incorrect.——Mr. James Ward has recently been performing some interesting experiments on the nervous system of the crayfish.[1] He arrives at the conclusions from cutting the nervous cords at various positions, that there is no decussation of the longitudinal nerve fibres unless within the supra-œsophageal ganglion; that the supra-œsophageal ganglion is the highest center of nervous activity, though not identical with the cerebral lobes of vertebrates, and that the infra-œsophageal ganglion is the great center for the co-ordination of the movements of the body.——The "Arbeiten" of the Zoölogical Institute of Vienna, Vol. II, Part II, 1879, contains a revision of the known genera and species of the Platyscellidæ (Crustacea Amphipoda), and a description of a new Siphonophore from the Mediterranean by Carl Claus.——Mr. Gibbes[2] has been making some investigations regarding the structure of the spermatozoa, and finds that the head, from its reaction with coloring agents, possesses a different chemical structure from the rest of the organism. A filament was found to arise at the base of the head, in all the animals examined, which was united to the "tail" of the spermatozoön by a delicate membrane, and Mr. Gibbes maintains that the head is enclosed in a sheath continuous with this membrane, and that the motive power lies in the filament and the membrane attaching it to the tail.

---

[1] Some notes on the Physiology of the Nervous System of the Crayfish. Journal of Physiology, Vol. II, pp. 214–227.

[2] On the Structure of the Vertebrate Spermatozoön, by Heneage Gibbes. Quar. Jour. Micro. Sci., Oct., 1879, pp. 487–491, pl. XXIV.